‘El Dorado’ and ‘La Estrella’: New Tropical Pumpkins (*Cucurbita moschata* Duchesne)

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Tropical Pumpkin Variety Improvement

Variety	Developer	Date
Borinquen	P.R. AES	1940's
Camaguey	P.R. AES	1940's
Fortuna	P.R. AES	1950
La Primera	Fla. AES	1979
La Segunda	Fla. AES	-
Soler	P.R. AES	-
Linea C Pinta	P.R. AES	-

Desirable Tropical Pumpkin Fruit Characteristics

Puerto Rico Survey

1. ORANGE – YELLOW TO DARK – ORANGE FRUIT WALL
2. PIEBALD OR DARK PIEBALD RIND COLOR
3. MEDIUM SIZE (3.6 TO 6.8 KG)
4. SMOOTH FRUIT SURFACE
5. GLOBE, FLAT OR ROUND REGULAR SHAPE

OBJECTIVES OF TROPICAL PUMPKIN IMPROVEMENT

*F_1 Hybrids

*Compact Plant Habit

*Concentrated, Early Maturity

*High Yields

*Thick, Deep Orange Flesh

*Readily Available Seed Supply

Yields of Tropical Pumpkin Compact Plant Inbreds and Their Hybrids. Spring 1995.

	Yield ($t \cdot ha^{-1}$)	
Bush Inbreds	**Inbreds**	**Hybrids**
C42-1-9	29.4	58.3
G38-2	15.5	51.7
G39-5	16.9	51.8

Yields of Tropical Pumpkin Vining Inbreds and Their Hybrids. Spring 1995.

	Yield ($t \cdot ha^{-1}$)	
Vining Inbreds	Inbreds	Hybrids
La Primera	35.5	47.6
La Segunda	54.6	53.2
Linia C Pinta	31.0	56.8
Seminole	33.0	54.3
Soler	40.6	55.9

ORIGIN OF COMPACT PLANTS

*Bush Butternut

*Burpee's Butterbush

*Cornell 89-441-3

ORIGIN OF LONG-VINE PARENTS

*Borinquen

*La Primera

*La Segunda

*Linea C Pinta

*Seminole

*Soler

Incidence and Severity of Silverleaf

Cultivar	1991 (%)	1992 (%)	1991 Severity[1]	1992 Severity[1]
Borinquen	90	100	4.0	4.0
Linea C Pinta	90	100	3.0	4.0
Soler	85	100	3.0	4.0
La Primera	35	75	1.6	1.0
La Segunda	25	0	1.8	0
L18-4	53	0	1.3	0

[1] 0 none to 4 severe silverleaf

ANTHESIS OF TROPICAL PUMPKIN FLOWERS (DAP)

	Spring 1999		Fall 1999		Spring 2000		Average	
Entry	♀	♂	♀	♂	♀	♂	♀	♂
El Dorado	47	51	40	42	49	52	45	48
La Estrella	36	46	33	38	37	47	35	44
La Primera	-	-	-	-	46	54	46	54

NUMBER OF FRUIT PER TROPICAL PUMPKIN PLANT

Entry	Spring 1999	Fall 1999	Spring 2000	Average
	Fruit/plant (no.)			
El Dorado	5.0	3.0	4.2	4.1
La Estrella	5.3	2.2	3.4	3.6
La Primera	-	-	4.6	4.6

TROPICAL PUMPKIN FRUIT WEIGHT

Entry	Spring 1999	Fall 1999	Spring 2000	Average
	Average Fruit Weight (kg)			
El Dorado	2.6	2.3	2.3	2.4
La Estrella	3.8	3.5	2.2	3.2
La Primera	-	-	4.5	4.5

TROPICAL PUMPKIN YIELDS

Entry	Spring 1999	Fall 1999	Spring 2000	Average
	Yield ($t \cdot ha^{-1}$)			
El Dorado	**65.0**	**27.7**	**67.3**	**53.3**
La Estrella	**100.0**	**30.3**	**58.2**	**62.8**
La Primera	**-**	**-**	**42.6**	**42.6**

Tropical Pumpkin Fruit Characteristics. Spring 2000.

Entry	Fruit Characteristics			
	Flesh thickness (cm)	Flesh color (1-5)	Eq:Polar ratio	Dry matter (%)
El Dorado	4.1 b	4.9 a	1.06 b	13.3 a
La Estrella	3.3 c	4.0 b	1.32 a	12.3 ab
La Primera	4.6 a	4.9 a	1.29 a	14.0 a

Total carotenoid and Hunter color values for La Estrella, El Dorado and La Primera tropical pumpkin cultivars. Spring 2001.

Cultivar	Carotenoids ($mg \cdot kg^{-1}FM$)	Hunter L*[z]	Hunter A*[y]	Hunter b[x]	Hunter Hue°[w]	Hunter chroma[v]
El Dorado	56.82 a[u]	73.24 a	17.70 a	39.28 a	65.82 b	43.11 a
La Estrella	48.92 b	69.28 b	16.88 a	38.08 a	66.14 b	41.72 a
La Primera	51.67 ab	71.13 ab	14.27 b	40.08 a	70.42 a	42.67 a

[z]L* = lightness values (100 = white; 0 = black).

[Y]a* = redness, the higher the value the more red the flesh.

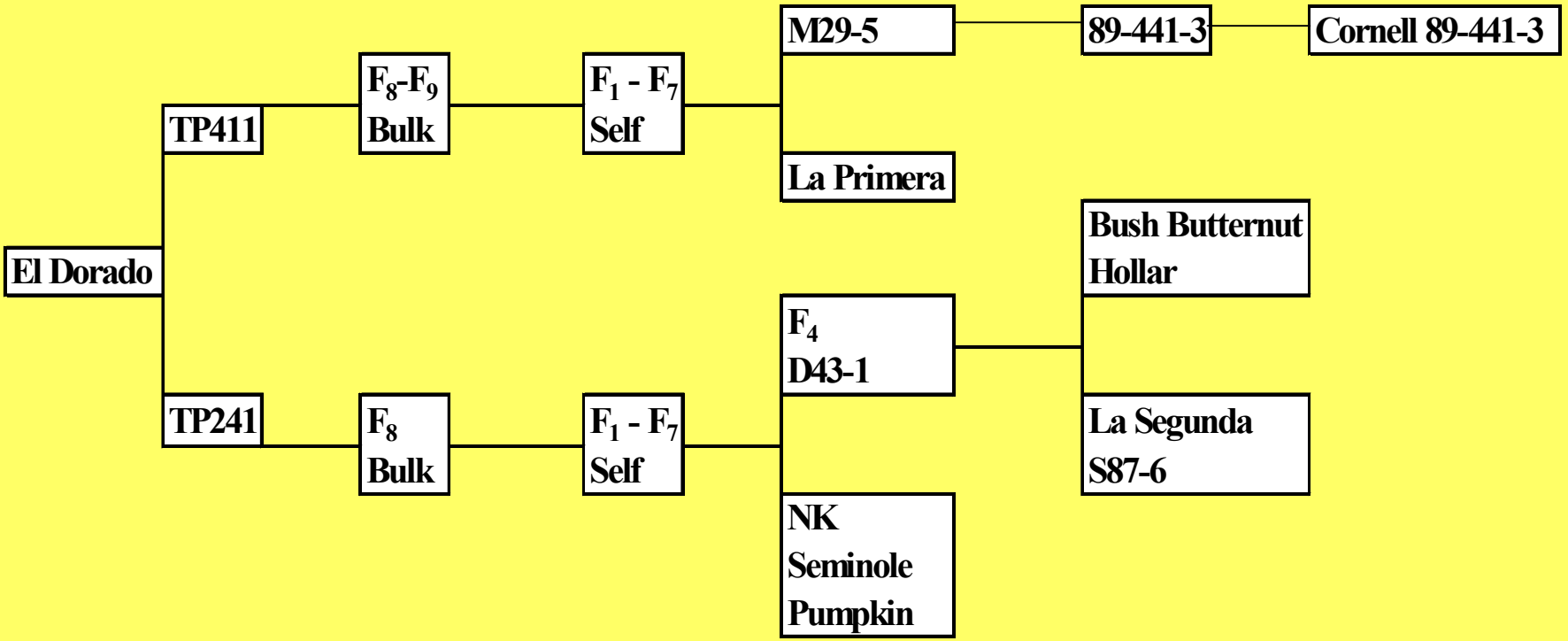
[X]b* = yellowness, the higher the value the more yellow the flesh.

[w]Hue angle = measured in degrees from 0-360. For this product 0º = red, 45º = orange, and 90º = yellow

[v]Chroma = measures color intensity, the higher the value, the "brighter" the flesh appearance.

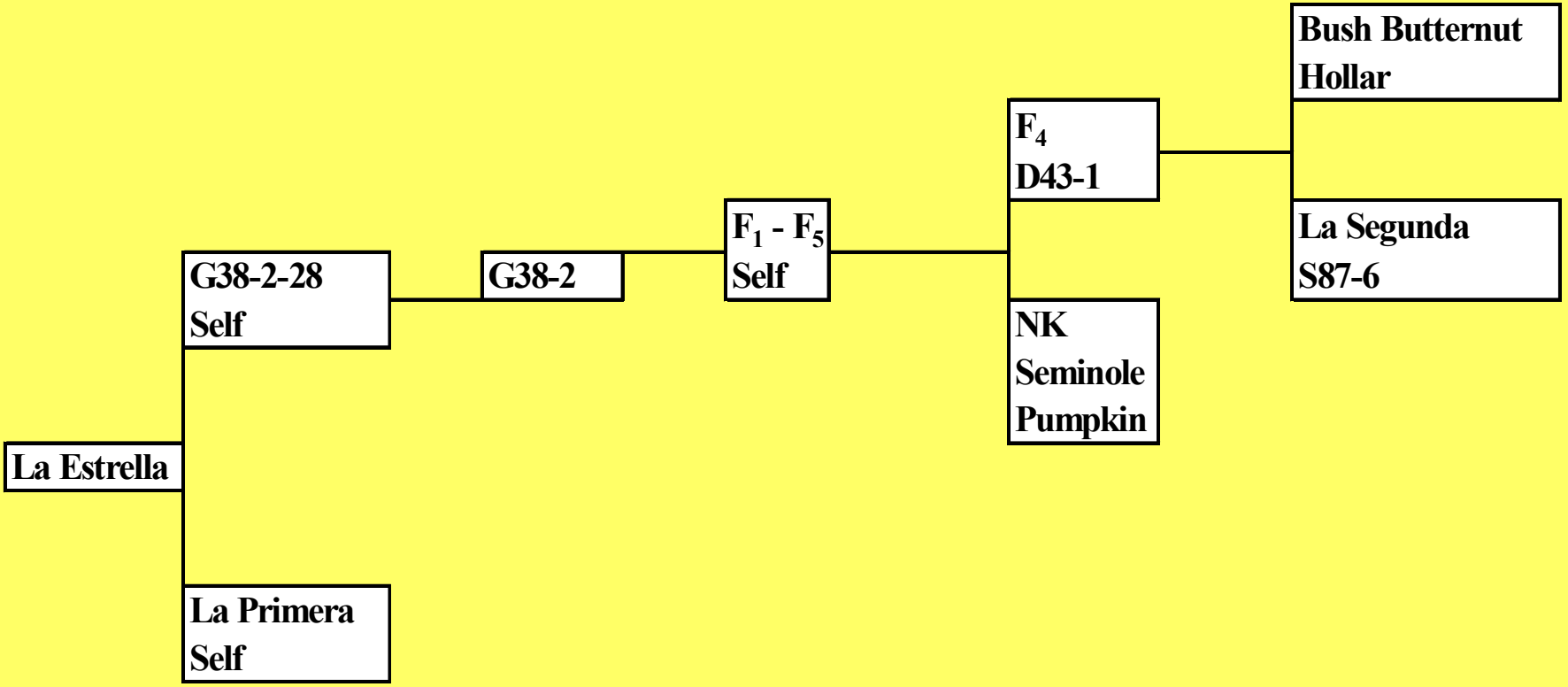
[u]Mean separation in columns by Duncan's multiple range test, 5% level.

El Dorado Tropical Pumpkin Pedigree



El Dorado

La Estrella Tropical Pumpkin Pedigree



La Estrella

PUMPKIN VARIETY COMPARISON

Characteristic	El Dorado	La Estrella
Compact Plant	+	
Earliness		+
Fruit Size		+
Fruit Uniformity	+	
Flesh Color	+	
Yield		+

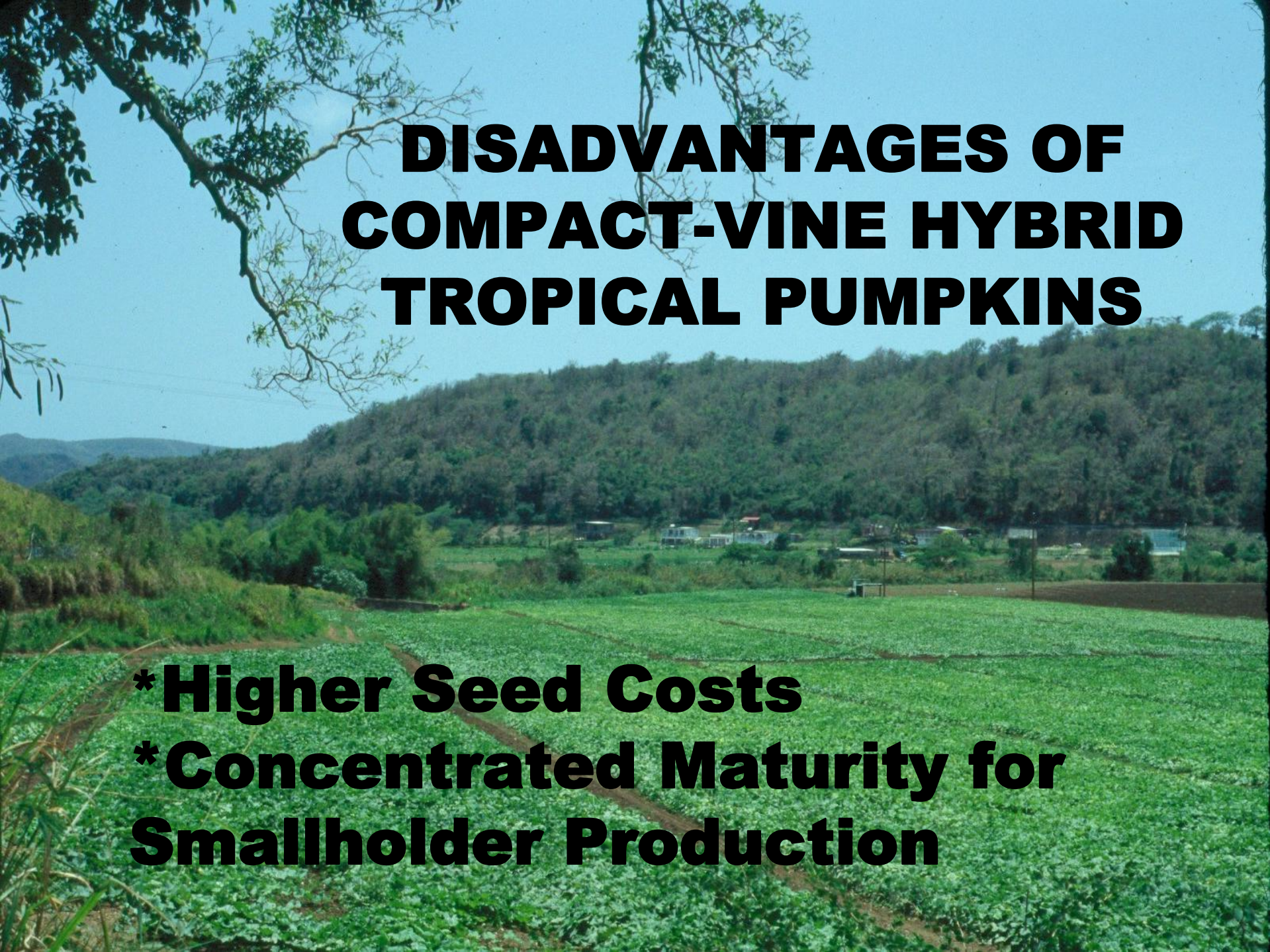
ADVANTAGES OF COMPACT-VINE HYBRID TROPICAL PUMPKINS

*Commercial Seed Availability

*Higher Plant Populations

*Earlier, Concentrated Harvest

*Higher Yields


DISADVANTAGES OF COMPACT-VINE HYBRID TROPICAL PUMPKINS
*Higher Seed Costs
*Concentrated Maturity for Smallholder Production

SUMMARY

- Compact plant type tropical pumpkin inbreds have been developed
- Hybrids have been constructed between compact plant inbreds (SS) and vining and compact plant inbreds (SV)
- Heterosis has been shown
- SS hybrids produce compact plants, SV hybrids develop intermediate-length vines
- SV hybrids are earlier than SS hybrids and produce larger, but more variable fruit
- Compact plants permit greater plant density and higher concentrated yields per unit area

RECOMMENDED TROPICAL PUMPKIN SPACING

Plant Type	Spacing (m)	Area (m^2)
Vining	2.0 x 2.5	5.0
Compact	1.0 x 1.5	1.5

Seed Source

Rupp Seeds, Inc.

17919 County Road B

Wauseon, Ohio 43567

Phone: 419-337-1841

Fax: 419-337-5491

http://www.ruppseeds.com

ADVANCED EXPERIMENTAL HYBRIDS